



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,682	12/12/2005	Yanzhong Dai	CN02 0035 US1	8975
65913	7550	10/28/2009		
NXP, B.V. NXP INTELLECTUAL PROPERTY & LICENSING M/S41-SJ 1109 MCKAY DRIVE SAN JOSE, CA 95131			EXAMINER HUANG, DAVID S	
			ART UNIT 2611	PAPER NUMBER
			NOTIFICATION DATE 10/28/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary

Application No.

10/540,682

Applicant(s)

DAI ET AL.

Examiner

DAVID HUANG

Art Unit

2611

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-10 and 12-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-28 is/are allowed.
- 6) ☒ Claim(s) 1, 9, 10 and 18-22 is/are rejected.
- 7) ☒ Claim(s) 3-8 and 12-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/26/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The references listed in the Information Disclosure Statement(s) filed on 6/26/2009 have been considered by the examiner (see attached PTO-1449 form or PTO/SB/08A and 08B forms).

Response to Arguments

2. Applicant's arguments with respect to the drawings have been fully considered but they are not persuasive. No replacement sheets have been received.

3. Applicant's arguments with respect to formal matters in claims 1-9 and 14-17 have been fully considered and are persuasive. The objections to claims 1-9 and 14-17 have been withdrawn.

4. Applicant's arguments, with respect to §112, 2nd paragraph rejections of claims 2-5,7,8, and 22 have been fully considered and are persuasive. The rejection of these claims has been withdrawn (claims 19-21 remain rejected, see below).

5. Applicant's arguments with respect to double patenting have been fully considered but they are not persuasive. Claims 1 and 9 remain provisionally rejected on the grounds of non-statutory obviousness-type double patenting (see below).

6. Applicant's arguments with respect to the §103 rejection of claims 1, 2, 9-11 and 18 have been fully considered but they are not persuasive.

Applicant's argument: The combination of cited references fails to teach or suggest all the claim limitations of amended claim 1. Specifically, claim 1 has been amended to recite [the limitations of canceled claim 2]... The resulting copy signal [of Petrus] is a combination of oversampled outputs 605 from receivers 122, not a single signal from a single receiver 122. As

such, the correct or best weights are based upon a combination of signals from two or more receivers not from data outputted from one of the plurality of groups of radio frequency signal processing modules as recited in claim 1.

Examiner's response: Petrus discloses decision-directed smart antenna combining system (Fig. 6, signal copy, 607, weight calculate and demod 615, essentially a baseband processing block), in which the weight vector is initialized as $[1 \ 0 \ 0 \ \dots \ 0]^T$, such that the initial operation is to calculate an actual weight vector according to equations 8 and 9 (col. 12, lines 1-40). Thus, the initialized weight vector only passes a single antenna signal, and the actual combining of multiple antenna signals, is not enabled until the next converged weight vector. As such, only a single antenna signal is used in the initial operation, since the weight vector nulls out all but one signal. Therefore, Petrus properly discloses using only "one of the plurality of groups of radio frequency signal processing modules".

Applicant's arguments with respect to claims 10 and 22, are based on those presented for claim 1, which have been addressed above.

Drawings

7. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not

accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claims 19-21** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 recites the limitation "providing said weight to each of the plurality of weight adjusting modules" in lines 13-14. It is unclear which weight is being provided to each module, since the wording suggests that the same weight is provided to all the modules. For examination on the merits, the limitation in question will be understood as providing each module with its respective weight.

Claims 20 and 21 are dependent on claim 19, and are likewise rejected.

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined

application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1 and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 and 17 of copending Application No. 10/540,791 (line # refer to preliminary amendment) in view of Petrus (US 6,177,906).

Regarding claim 1, claim 1 of application no. 10/540,791 discloses a mobile terminal with smart antennas, comprising:

a plurality of groups of radio frequency signal processing modules, for transforming received multi-channel radio frequency signals to multi-channel baseband signals (lines 1-5);

a smart antenna processing module, for smart antenna baseband processing said multi-channel baseband signals outputted from said plurality of groups of radio frequency signal processing module so as to combine said multi-channel baseband signals into single-channel baseband signals, according to control information received one-off as said smart antenna processing module is enabled (lines 6-10); and

a baseband processing module, for providing said control information to said smart antenna processing module, and baseband processing said single-channel baseband signals outputted from said smart antenna processing module (lines 12-15).

Claim 1 of application no. 10/540,791 fails to expressly disclose providing said control information to said smart antenna processing module according to data outputted from one of the plurality of groups of radio frequency signal processing modules before said smart antenna processing module is enabled.

Petrus discloses rapidly converging, decision-directed smart antenna combining system (Fig. 6, signal copy, 607, weight calculate and demod 615, essentially a baseband processing block; see also col. 11, lines 50-67), in which the weight vector is initialized as $[1 \ 0 \ 0 \ \dots \ 0]$, such that the initial operation is to calculate an actual weight vector according to equations 8 and 9 (col. 12, lines 1-40). Thus, the initialized weight vector only passes a single antenna signal, and the actual combining of multiple antenna signals, is not enabled until the next converged weight vector.

Therefore, it would have been obvious to one of ordinary skill in the art to provide system disclosed by claim 1 of application 10/540,791 with the smart antenna combining system of Petrus since it improves performance by enabling a rapidly converging method.

Regarding claim 9, claim 17, dependent on claim 1, of application no. 10/540,791 discloses the mobile terminal is applied to cellular communication mobile terminals or other wireless communication terminals, wireless LAN terminals employing one of following standards: TD-SCDMA, GSM, GPRS, EDGE, WCDMA, CDMA IS95, CDMA2000.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 1, 2, 9-11, and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (specification, page 2, line 6 - page 3; hereinafter "APA") in view of Li (US 7,130,365) and Petrus (US 6,177,906).

Regarding **claims 1 and 10**, APA discloses a mobile terminal with smart antennas, comprising:

a plurality of groups of radio frequency signal processing modules, for transforming received radio frequency signals to baseband signals (RF and ADC blocks, Fig. 2, see also RF module 101 and ADC 102 in Fig. 1, page 2, lines 18-22);

a smart antenna processing module, for smart antenna baseband processing said baseband signals outputted from said plurality of groups of radio frequency signal processing modules so as to combine said baseband signals, according to control information received one-off (SA module 206, Fig. 2); and

a baseband processing module, for providing said control information to said smart antenna processing module and baseband processing said combined baseband signals outputted from said smart antenna processing module (Rake receiver/despreading module 209, Viterbi 210, and baseband control module, Fig. 2; page 3, lines 19-25).

APA fails to expressly disclose (i) that the received radio frequency signals and subsequent baseband signals are multi-channel signals, (ii) the smart antenna processing module combines the multi-channel baseband signals into single-channel baseband signals, (iii) that the control information is received one-off as said smart antenna processing module is enabled, and (iv) wherein said baseband processing module provides said control information to said smart antenna processing module according to data outputted from one of the plurality of groups of radio frequency signal processing modules before said smart antenna processing module is enabled.

With respect to (i)-(ii), it is well known in the art that CDMA signals are composed of multiple code channels and that smart antenna technology processes each code channel separately, as evidenced by Li (column 2, lines 7-9 and 11-12).

Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to specify multi-channel received RF and baseband signals in the system disclosed in APA, and that the smart antenna of APA combines the multi-channel baseband signals to generate a single channel baseband signal, since these are all well known in the art for CDMA and smart antenna technology.

With respect to (iii)-(iv), Petrus discloses decision-directed smart antenna combining system (Fig. 6, signal copy, 607, weight calculate and demod 615, essentially a baseband processing block), in which the weight vector is initialized as $[1 \ 0 \ 0 \ \dots \ 0]^T$, such that the initial operation is to calculate an actual weight vector according to equations 8 and 9 (col. 12, lines 1-40). Thus, the initialized weight vector only passes a single antenna signal, and the actual combining of multiple antenna signals, is not enabled until the next converged weight vector.

Because both APA and Petrus disclose means and methods of smart antenna combining according to control information from baseband processing, it would have been obvious to one of ordinary skill in the art to substitute one for the other for the predictable result of enabling smart antenna combining according to control information.

Regarding **claim 9 and 18**, APA further discloses wherein the mobile terminal is applied to cellular communication mobile terminals or other wireless communication terminals, wireless LAN terminals employing one of following standards: TD-SCDMA, GSM, GPRS, EDGE, WCDMA, CDMA IS95, CDMA2000 (mobile terminal based on TD-SCDMA standard, page 2, line 6).

14. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over APA (specification, page 2, line 6 - page 3) in view of Li (US 7,130,365).

Regarding **claim 22**, APA discloses a mobile terminal, comprising: receiving means, for receiving radio frequency signals from the base-station via down-link, wherein the receiving means can transform signals received by smart antennas in the receiving means to single-channel signals to carry out a baseband processing according to control information received one-off by the receiving means.

APA fails to expressly disclose (i) receiving and transforming multi-channel signals, and (ii) wherein said control information is based upon data outputted from one of a plurality of groups of radio frequency signal processing modules before processing by said smart antennas is enabled.

With respect to (i), it is well known in the art that CDMA signals are composed of multiple code channels and that smart antenna technology processes each code channel separately, as evidenced by Li (column 2, lines 7-9 and 11-12).

Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to specify multi-channel received RF and baseband signals in the system disclosed in APA, and that the smart antenna of APA combines the multi-channel baseband signals to generate a single channel baseband signal, since these are all well known in the art for CDMA and smart antenna technology.

With respect to (ii), Petrus discloses decision-directed smart antenna combining system (Fig. 6, signal copy, 607, weight calculate and demod 615, essentially a baseband processing block), in which the weight vector is initialized as $[1 \ 0 \ 0 \ \dots \ 0]^T$, such that the initial operation is to calculate an actual weight vector according to equations 8 and 9 (col. 12, lines 1-40). Thus, the initialized weight vector only passes a single antenna signal, and the actual combining of multiple antenna signals, is not enabled until the next converged weight vector.

Because both APA and Petrus disclose means and methods of smart antenna combining according to control information from baseband processing, it would have been obvious to one of ordinary skill in the art to substitute one for the other for the predictable result of enabling smart antenna combining according to control information.

Allowable Subject Matter

15. Claims 23-28 are allowed.

16. Claims 19-21 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
17. Claims 3-8 and 12-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID HUANG whose telephone number is (571)270-1798. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSH/dsh
10/21/2009
/David Huang/
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611